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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,642	02/25/2005	Toshio Nakane	1226-109	8456

23117 7590 10/12/2007  
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ARLINGTON, VA 22203

EXAMINER
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LISTVOYB, GREGORY

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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10/12/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/525,642

**Applicant(s)**

NAKANE ET AL.

**Examiner**

Gregory Listvoyb

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 6-14 is/are pending in the application.
- 4a) Of the above claim(s) 2-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/06/2007</u> | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/21/2007 has been entered.

Request for reviewing and reconsideration has been considered.

### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 6-12, rejected under 35 U.S.C. 102(b) as being anticipated by Linstid, III et al (US Patent 6222000), herein Linstid.

Linstid discloses amorphous wholly aromatic polyester amide exhibiting optical anisotropy obtained by copolymerizing:

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A 4-hydroxybenzoic acid-15-60%, preferably 20-40%

B 2-hydroxy-6-naphtoic acid 15-60%, preferably 20-40%(A/B ratio is always within the range of 0.15-4, meeting the limitation (3) of Claim 1)

C p-aminophenol 5-20%, preferably 10-15% (meeting the limitation (1) of Claim 1)

D isophthalic acid 7-15 %, preferably 10-15% meeting the limitation (2) of Claim 1)

E terephthalic acid 5-20% , preferably 10-15% (Columns 3-4) Note that the presence of terephthalic acid is not required. However, it is not prohibited by claim 1 as it written.

Glass transition temperatures, of the above copolymers are about 150C (Column 6, line 5), whereas melting points  $T_m$  are not observed (Column 5, line 65). DSC measurements are made at 20 C/min temperature rising rate (Column 17, line 45), meeting the limitation (4) and (5) of Claim 1.

In reference to Claims 6 –12, Linstid teaches that the above liquid crystal copolymers may be used in combination with polyolefins, (Example 26, Column 24 and Column 3, line 10) for production of films, sheets, fibers, multi-layer laminates, blow-molded containers and other articles. (Column 16, line 20).

***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Linstid in combination with Furuta et al (US Patent 5612101)

Linstid discloses amorphous wholly aromatic polyester amide exhibiting optical anisotropy (see discussion above).

Linstid not specify that polyethylene in the composition is high density polyethylene. Also, Linstid did not teach that blow-molded container, produced with his copolymer is a fuel tank.

Hence attention directed towards the Furuta reference. Linstid and Furuta are analogous, because they are from the same field of endeavor, utilizing compositions based on liquid crystal copolymers.

Regarding Claim 13, Furuta discloses that polyethylene in his composition is high density polyethylene (HDPE) (Example 6, column 17).

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It would have been obvious to a person of ordinary skills in the art to use HDPE with Linstid copolymers for high end applications, such as large blow molded containers, since HDPE has much better mechanical properties than LDPE due to its higher crystallinity.

Regarding Claim 14, Furuta discloses that his composition can be processed into a fuel tank (Comparative Example 6, Column 18).

It would have been obvious to a person of ordinary skills in the art to use a composition based on Linstid copolymers for manufacturing of fuel tanks, since Linstid's composition has an exceptional mechanical and barrier properties and ability to be processed by blow molding.

### ***Double patenting***

Claim 1 and 6-14 provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-5 and 12-25 of copending Application No. 10/538845. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

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Although the conflicting claims are not identical, they are not patentably distinct from each other, because the Application No 10/538845 claims the composition based on the same liquid crystal polymer, which is fully encompassed by the claims of present Application.

### ***Response to Arguments***

Applicant's arguments filed on 9/06/2007 have been fully considered but they are not persuasive.

The Applicant states that "the presently claimed polyester amide is unexpectedly superior to the general showing of Linstid, III et al in view of elongation. In addition, the claimed polyester amide of the present invention is unexpectedly superior to the general showing of Linstid, III et al in view of its adhesiveness to another resin."

Note that the Examiner relies on the full disclosure of Linstid, not only on the preferred Examples (see MPEP 2123).

Regarding Furuta's reference the Applicant stated that "Specifically, Furuta merely discloses blending a liquid crystal polyester (LCP) with an olefin." This is incorrect. Furuta discloses the above blend in his Abstract.

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Both Linstid and the applicant disclose a polyester where the components ratio varies in a broad range. Varying amount of the components, such as isophthalic acid, 2-hydroxy-6-naphthoic acid and p-aminophenol one of ordinary skills of the art can achieve desirable combination of mechanical properties (i.e. modulus and elongation) and adhesiveness.

The Examiner relies on the reference cited in its entirety. In his Specification Linstid discloses that recurring unit IV can be entirely constituted from p-aminophenol (column 8, line 60).

The Applicant further states that "Thus, even if an ordinarily skilled person would consider combining the LCP of Furuta with the wholly aromatic polyester of Linstid III et al, the present invention as defined by claims 13-14 would not be the result."

Claims 13-14 disclose HDPE as polyolefin and fuel tank as an article.

In the Non-Final Office Action, mailed on 12/26/2006 the Examiner cited:

Regarding Claim 13, Furuta discloses that polyethylene in his composition is high density polyethylene (HDPE) (Example 6, column 17).

Regarding Claim 14, Furuta discloses that his composition can be processed into a fuel tank (Comparative Example 6, Column 18).



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Therefore, the Applicant's argument in this regards are incorrect.

Regarding provisional double patenting issue, Claim 1 of Application #10/538845 discloses a composition of a modified polyolefin or polyamide resin and LC copolymer based on:

- A) 4-hydroxybenzoic acid,
- (B) 2--hydroxy-6-naphthoic acid,
- (C) p-aminophenol
- (D) isophthalic acid.

The above structure is identical to one Claimed in the Application examined (see Claim 1), whth the same ratio between the components

New IDS, mailed on 9/06/2007 is considered.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory Listvoyb whose telephone number is (571) 272-6105. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregory Listvoyb  
Examiner  
Art Unit 1796

GL  
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RABON SERGENT  
PRIMARY EXAMINER